

CLAIMS

1. An apparatus for transferring images (I) to a wooden support (10), of the type comprising:

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- a. means (1, 2, 3) for acquiring and/or creating an image;
- b. at least one source (5) of a laser beam;
- c. means (6, 8) for moving, either in rotation and/or translation, the laser beam (L) relative to said wooden support, or vice versa, for moving the wooden support relative to said laser beam (L), as well as for focusing said laser beam relative to said support;
- 10 d. at least one adjustment unit (4) for the emission of said laser beam;
- e. at least one control unit (7, 9) for said moving and focusing means; and
- f. means (1, 3) for converting the information of said image into instructions for said at least one adjustment unit and said at least one control unit;

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characterized in that said at least one adjustment unit adjusts the emission of said laser beam by directly varying the pumping of the active material and/or by varying the operation of a modulator located within the resonant cavity of said source of a laser beam.

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2. The apparatus according to claim 1, wherein said image is in digital format, characterized in that said means for acquiring and/or creating an image in digital format are configured for obtaining and storing bitmap or raster or vectorial images, in black and white and/or shades of grey.

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3. The apparatus according to claim 1 or 2, characterized in that said means for focusing and moving, in rotation and/or translation, are of the type having a scan head with 2 or 3 axes

- for beam transmission.
4. The apparatus according to any preceding claim, characterized in that said means for acquiring and/or creating an image comprise at least one processor and a software for image processing.
5. The apparatus according to claim 4, characterized in that it comprises at least one software for random generation of wood grain images.
6. The apparatus according to any preceding claim, characterized in that the means for acquiring and/or creating an image and said means for converting the information of said one image into instructions for said adjustment unit and for said control unit, as well as said at least one adjustment unit and said at least one control unit comprise at least one processor provided with a CAD and/or CAE and/or CAM software system.
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7. The apparatus according to any preceding claim, characterized in that the active material of said at least one laser beam source is selected from gaseous materials, solid state materials, or excimers with UV emissions.
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8. The apparatus according to any preceding claim, characterized in that the power of the laser beam emitted from said at least one laser beam source ranges from 1 W and 1500 W.
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9. The apparatus according to any preceding claims, characterized in that said at least one source emits a laser beam with a wavelength ranging from 0,1 and 20 micron.
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10. The apparatus according to any preceding claim, wherein the active material of said source of a laser beam is in the gaseous state and wherein said at least one adjustment unit for the laser

beam emission comprises means for directly varying the excitation of the radio frequency pumped source.

5           11. The apparatus according to any claim 1 to 9, wherein the active material of said source of a laser beam is a material in the solid state and wherein said at least one adjustment unit for the laser beam emission comprises a Q-Switch modulator placed inside the resonant cavity.

10           12. A method for transferring images to a wooden support by means of an apparatus provided with at least one source of a laser beam, means for focusing and moving the laser beam relative to this wooden support, as well as at least one adjustment unit for the emission of said laser beam, the method comprising the steps of:

- 15           a. acquiring and/or creating an image to be transferred;  
b. converting the information of this image into instructions for adjusting the emission, movement and focusing of the laser beam relative to said support;  
c. operating said moving and focusing means and said at least one adjustment unit according to said instructions to reproduce said image on said wooden support;

20           characterized in that said at least one adjustment unit adjusts the emission of said laser beam by directly varying the pumping of the active material and/or by varying the operation of a modulator placed within the resonant cavity of said at least one source of a laser beam.

- 25           13. The method according to claim 12, wherein said image, either acquired and/or created, is an image in digital format.  
14. The method according to claim 13, wherein said image is in the bitmap, raster, or vectorial format.

15.The method according to claim 13 or 14, wherein said image is acquired and/or created in black and white or in shades of grey.

5 16.The method according to any claim 12 to 15, wherein said image is an image of wood grains.

17.The method according to claim 16, characterized in that said image of wood grains is obtained by means of random generation.

10 18.The method according to any claim 12 to 17, wherein said wooden support is selected from pistol or carbine grips, rifle butts and/or forearms.

15 19.The method according to any claim 12 to 18, wherein said instructions for adjusting the emission, movement, and focusing of the laser beam relative to said support allow said laser beam to penetrate within said wooden support by a thickness ranging from 0,1 and 1 mm.

20 20.The method according to any claim 12 to 19, characterized in that said instructions for adjusting the emission, movement, and focusing of the laser beam relative to said support provide that a laser beam is emitted such as to irradiate the surface of said support with an energy per surface unit ranging from 0 j/cm<sup>2</sup> to 43,7 j/cm<sup>2</sup>.

25 21.The method according to claim 20, characterized in that said support is locally subjected to irradiation by means of said laser beam, with an energy per surface unit ranging from 2,35 j/cm<sup>2</sup> to 43,7 j/cm<sup>2</sup>, in order to blacken the surface portion of the support being subjected to said local irradiation.

22.The method according to any claim 12 to 21, wherein said wooden support is treated by means of additives for

accelerating the carbonization and bleaching thereof, prior to said step of operating said moving and focusing means and said at least one adjustment unit according to said instruction for reproducing said image on said wooden support.

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